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EXAMINER	
WILKINS III, HARRY D	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/582,982
Filing Date: July 10, 2000
Appellant(s): ITOU ET AL.

Arthur J. Steiner
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3 August 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 1 and 2 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

JP 06-293939 A	ADACHI et al	10-1994
US 5,705,124 A	OCHI et al	1-1998
US 5,989,694 A	MITAMURA et al	11-1999

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

---Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adachi et al (JP 06-293939, with reference to the machine translation) with support from Ochi et al (US 5,705,124).

Adachi et al teach (see abstract) bearing parts that are made from a high carbon, chromium steel that are used at high temperatures due to their excellent rolling fatigue values. Adachi et al teach (see Table 1) example steel no. 6, which contains 1.01 wt% C, 0.42 wt% Si, 0.39 wt% Mn, 0.012 wt% P, 0.012 wt% S, 1.63 wt% Ni, 2.37 wt% Cr, 0.039 wt% Al, 0.0081 wt% N, 0.0012 wt% Ti, 0.0011 wt% O and the rest Fe. Adachi et al teach (see paragraph 34 and Table 2) that the process of treating the steel was to harden at 840°C with an oil quench, followed by tempering at 220°C, which method produces a part that has a hardness of HRC 59.0.

This composition is within the presently claimed range, with the exception of the value of Si. However, the value of Si disclosed by Adachi et al is (see abstract) less than 0.5 wt%. The presently claimed composition range of Si would have been obvious to one of ordinary skill in the art because the prior art range is close enough, e.g.- 0.4999 wt% vs. 0.5 wt%, that it would have been expected to have the same properties,

see MPEP 2144.05.I. In addition, the value of example steel no. 6, 0.42 wt%, is close enough to the presently claimed ranged that one of ordinary skill in the art would have expected the steel to have the same properties. Applicant has not demonstrated unexpected results within the presently claimed range with comparison to the disclosed range of Adachi et al.

Adachi et al teach that the mean carbide size for example 6 is 0.43 μm, but do not mention the maximum carbide size. However, as the composition of Adachi et al had an nearly identical composition and was treated by an identical process, one of ordinary skill in the art would have considered the steel of Adachi et al to possess a maximum carbide size of less than 8 μm as claimed.

Adachi et al do not expressly teach that the bearing parts are part of an antifriction bearing, however, the bearing parts of Adachi would have been expected by one of ordinary skill in the art to inherently have antifriction properties (a requirement for bearing steels) and, thus, the bearing parts would have been incorporated into an antifriction bearing, which is made from at least three parts, an inner ring, an outer ring and a rolling element (e.g.-roller or ball) as disclosed by Ochi et al at col. 1, lines 5-10.

Regarding claim 2, Adachi et al teach (see paragraph 24) that 0.03-2 wt% V may be added to the steel for creating small carbonitrides (charcoal nitride) and for raising temper-softening resistance.

---The rejection grounds based on Takata et al in view of Ochi et al, Applicant's admission of prior art and "High Carbon Chromium Bearing Steels" has been withdrawn. It was agreed that without the "blue print" of the present specification that one of

ordinary skill in the art would not have arrived at the present invention given these references.

(11) Response to Argument

Appellant has argued:

(1) The Examiner simply reformulates example steel No. 6 of Adachi et al to have 0.4999 wt% Si.

In response, the rejection does not state this. The rejection is based on the fact that Adachi et al teach a range of Si (see abstract and paragraph 11 of machine translation) of less than 0.5 wt%. At the very least, Adachi et al then teaches a nearly identical range that one of ordinary skill in the art would have considered to have the same properties. See MPEP 2144.05.I and Titanium Metals v. Banner. Nevertheless, the reasoning in Adachi et al for not going above 0.5 wt% is that at above 0.5 wt% the steel composition loses workability. However, one of ordinary skill in the art would have known that there would be a trade off of beneficial properties by increasing the Si content. Above 0.5 wt%, the workability would be reduced, but the "resistance-to-temper-softening" would be increased. A routineer in the art would have recognized that there would be a "balancing act" between properties affected by Si, namely the temper-softening resistance vs. the workability. One of ordinary skill in the art would have been led to increase the Si above 0.5 wt% when more temper-softening resistance was required and less workability was acceptable. Thus, the teaching of Adachi et al is not a teaching away from increasing Si above 0.5 wt%, but merely a guideline for

retaining workability for the alloy. Therefore, the grounds of rejection stand based on the closeness of the prior art range of Si to the presently claimed range.

Appellant also looks to Mitamura et al to support his position that there is a technical difference at 0.5 wt% Si. However, the discussion presented by Mitamura et al supports the conclusion of obviousness based on Adachi et al. Mitamura et al teach (see col. 4, lines 33-40) that a Si content below 0.5 wt% lacks sufficient high temperature hardness. A harder alloy decreases the workability. (The increased hardness indicates a reduced ability to be deformed, i.e.-worked.) Thus, Mitamura et al agree with Adachi et al in that above 0.5 wt% Si, workability is reduced. Mitamura et al also shows that if one was willing to accept less workability in exchange for more hardness, then one of ordinary skill in the art would have increased the Si above 0.5 wt%.

[It should be noted that Appellant's original claim included a range of Si of from 0.3 wt% to 3.0 wt% and only amended the claimed range in view of the Adachi et al reference. While there is literal support for 0.50 wt% in the present specification, there is no support in the application as filed for any sort of property difference at 0.50 wt% Si.]

(2) Adachi et al teach to stay away from 0.5 wt% Si, not to see how close one could come without getting "burned".

In response, in actuality, this is what Adachi et al teach. Adachi et al teach that at values approaching 0.5 wt% the temper-softening resistance improves, but that above 0.5 wt% Si the workability decreases. In fact this teaches that one should strive for as close to 0.5 wt% as possible without going over to achieve the best temper-

softening resistance without loss of workability. However, as noted above, and in view of Mitamura et al, one of ordinary skill in the art would have been motivated to increase the Si to achieve more temper-softening resistance (i.e.-hardness) while offsetting this gain with a reduction in workability.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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September 8, 2004

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